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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,945	07/08/2005	Alexander Steinbrecher	STEINBRECHER, A. ET AL -1	6751
25889	7590	06/20/2007	EXAMINER	
WILLIAM COLLARD COLLARD & ROE, P.C. 1077 NORTHERN BOULEVARD ROSLYN, NY 11576			ANDRISH, SEAN D	
			ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/541,945

Applicant(s)

STEINBRECHER ET AL.

Examiner

Sean D. Andrish

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 - 11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 July 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 7/8/2005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: "B", "V", and "C". Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims are generally narrative and indefinite, failing to conform with current U.S. practice. The method claims do not have positively delineated steps. In the art rejections below the methods are treated as best understood by the examiner.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

5. Claims 1 – 4, 7, and 9 are rejected under 35 U.S.C. 102(a) as being anticipated by Troutt et al. (US2002/0153135).

Regarding claim 7, Troutt et al. discloses an apparatus for intensifying the permeability of ground layers that are close to boreholes and of filter bodies and filter layers in the underground exploitation area of wells, including a pulse generator (valve 92, in combination with gas supply line 86, ports 96, and nozzles 98), that can be lowered into the extraction area of the borehole (well 10) and moved up and down in said extraction area, a seismic sensor (pressure gauges 58) installed on the pulse generator (valve 92, in combination with gas supply line 86, ports 96, and nozzles 98), a surface-located control unit (automated flow control panel 60) that is connected via an instrument lead (automatic flow loop 56) and a control cable (hose 82) to the seismic sensor (pressure gauges 58) and the pulse generator (valve 92, in combination with gas supply line 86, ports 96, and nozzles 98) respectively, a surface pressure unit (bank of cylinders 50) connected via a pressure line (supply line 52) to the pulse generator (valve 92, in combination with gas supply line 86, ports 96, and nozzles 98), and an underground pump (42) that can be lowered into the extraction area of the borehole (well 10) (see Figures 1 and 3 and paragraphs 0017, 0018, 0021, 024, and 0026 of the Specification).

Regarding claim 9, Troutt et al. discloses an apparatus for intensifying the permeability of ground layers that are close to boreholes and of filter bodies and filter layers in the underground exploitation area of wells as discussed previously, and further discloses the use of a closing valve (valve 92) to control the volume of gas (which is functionally equivalent to the liquid volume) in the valve-closing chamber (gas supply line 86) and the pressure (see paragraph 0021 of the Specification).

Regarding claim 1, Troutt et al. discloses a method for intensifying the permeability of ground layers that are close to boreholes and of filter bodies and filter layers in the underground exploitation area of wells, including an underground pump (42) to continuously pump liquid away in the extraction area of the borehole (well 10), the liquid displaced is successively impinged upon by energy pulses (shockwaves) in the direction of the borehole walls, the filter bodies and the filter layers by continuously moving a pulse generator (valve 92, in combination with gas supply line 86, ports 96, and nozzles 98) up and down in said extraction area, and that the effect of each energy pulse (shockwave) is evaluated by means of seismic sensors (pressure gauges 58), and the parameters of the following energy pulses are determined according to the evaluation of the measuring results obtained for the previous energy pulse (see Figures 1 and 3 and paragraphs 0017, 0018, 0021, 024, and 0026 of the Specification).

Regarding claim 2, Troutt et al. discloses a method for intensifying the permeability of ground layers that are close to boreholes and of filter bodies and filter layers in the underground exploitation area of wells as discussed previously, and further discloses energy pulses (shockwaves) generated by a surface pressure unit (bank of cylinders 50) that is connected via a pressure line (supply line 52) to the pulse generator (valve 92, in combination with gas supply

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line 86, ports 96, and nozzles 98) moved in the extraction area, said pressure unit (bank of cylinders 50) exerting a high pressure on a gas (functionally equivalent to a liquid) introduced via the pressure line (supply line 52) in the pulse generator (valve 92, in combination with gas supply line 86, ports 96, and nozzles 98) and ejecting said gas at a defined pressure and for a defined period of time out of the pulse generator (valve 92, in combination with gas supply line 86, ports 96, and nozzles 98) into the liquid to be extracted (see Figures 1 and 3 and paragraphs 0018, 0021, and 0024 of the Specification).

Regarding claim 3, Troutt et al. discloses a method for intensifying the permeability of ground layers that are close to boreholes and of filter bodies and filter layers in the underground exploitation area of wells as discussed previously, and further discloses the use of seismic sensors (pressure gauges 58) installed on the pulse generator (valve 92, in combination with gas supply line 86, ports 96, and nozzles 98) to register the effect of each energy pulse (shockwave), transmitted via an instrument lead (automatic flow loop 56) to a control unit (automated flow control panel 60) located at the surface and evaluated there, and that after evaluation of the measuring signals, the parameters of the following energy pulse (shockwave) are defined by adjusting the pressure exerted by the pressure unit (bank of cylinders 50) and by at least one control signal that is transmitted via a control cable (hose 82) and triggers the pulse generator (valve 92, in combination with gas supply line 86, ports 96, and nozzles 98) at the defined time (see Figure 1 and paragraph 0018 of the Specification).

Regarding claim 4, Troutt et al. discloses a method for intensifying the permeability of ground layers that are close to boreholes and of filter bodies and filter layers in the underground exploitation area of wells as discussed previously, and further discloses a plurality of control

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signals which are transmitted to the pulse generator (valve 92, in combination with gas supply line 86, ports 96, and nozzles 98) to trigger the pulse generator (valve 92, in combination with gas supply line 86, ports 96, and nozzles 98) at a defined time, to set the gas volume (functionally equivalent to the liquid volume) for the hydraulic pulse and to define the duration of the energy pulse (shockwave) (see paragraphs 0021 and 0023 of the Specification).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 5, 6, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Troutt et al. (US 2002/0153135) in view of Thomas et al. (6,427,774).

Regarding claims 5 and 10, Troutt et al. discloses an apparatus and associated methods for intensifying the permeability of ground layers that are close to boreholes and of filter bodies and filter layers in the underground exploitation area of wells as discussed previously, but fails to disclose the use of packer disks positioned at the upper and lower ends of the pulse generator. Thomas et al. teaches the use of an upper packer assembly (309) and a lower packer assembly (311) to isolate the source of the energy pulses and to limit the depth interval of the well over which energy pulses are injected into the formation (see Figure 7 and column 12, lines 2 – 5 of the Specification). Since the apparatus as disclosed by Troutt et al. was meant to clean filters covering a particular portion of the borehole, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the apparatus as disclosed by Troutt et

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al. with the upper and lower packer disks as taught by Thomas et al. to isolate the source of the energy pulses and to limit the depth interval of the well over which energy pulses are injected into the formation. Given the structure as disclosed by Troutt et al. in view of Thomas et al., the steps of claim 5 would be inherently performed.

Regarding claim 6, Troutt et al. in view of Thomas et al. discloses a method for intensifying the permeability of ground layers that are close to boreholes and of filter bodies and filter layers in the underground exploitation area of wells as discussed previously. Since Troutt et al. discloses an apparatus for intensifying the permeability of ground layers without the use of packer disks as discussed previously, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the use of the apparatus as disclosed by Troutt et al. in view of Thomas et al. with the apparatus as disclosed by Troutt et al. to provide a more thorough cleaning of the filter bodies and a greater increase in permeability of the ground layers that are close to the borehole and of the filter bodies and filter layers in the underground exploitation area of the wells.

Regarding claim 11, Troutt et al. in view of Thomas et al. discloses the claimed invention except for specifying the diameter of the packer disks. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have constructed the packer disks such that their diameter corresponds to the internal diameter of the screen, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Troutt et al. (US 2002/0153135) in view of Prain et al. (US 2004/0069530). Troutt et al. discloses an apparatus

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for intensifying the permeability of ground layers that are close to boreholes and of filter bodies and filter layers in the underground exploitation area of wells as discussed previously, but does not disclose the details of an electromagnetically-activated pulse generator. Prain et al. teaches an electromagnetically-activated pulse generator, including a cylinder (170) in the upper portion of which a working chamber (172) of variable volume is located, said working chamber (172) being connected with pressure line (oilway 281) and having outflow apertures (valve 256/257) that are closed in the non-operative state, and in the lower portion of which a valve-closing chamber (valve chamber 260) is located, the two chambers being operatively interconnected by an electromagnetically operated valve piston (200) that can be moved downwards by momentary energisation of an electromagnet (see description of the electromagnetic solenoid aperture in paragraph 0052 of the Specification), thereby opening by means of an upper valve disk (valve stem 250) attached to the valve piston (200) the outflow apertures (valve 256/257) and releasing the excessive pressure in the working chamber (172) as a hydraulic pulse. When the piston (200) moves down, a lower valve disk (poppet head 86) attached thereto causes a strong pressure increase in the valve-closing chamber (chamber 141), and immediately after the pressure in the working chamber (172) has been reduced, the valve piston (200) can be pushed back into its starting position by means of the valve disk (poppet head 86 with spring 87) (see Figures 2a and 2b and paragraphs 0066 and 0068 – 0072 of the Specification). Prain et al. teaches that an electromagnetically-actuated pulse generator requires less energy than other pulse-generating techniques, thus making battery operation, with its attendant simplicity, feasible for long periods of time. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the apparatus as disclosed by Troutt et al. with the electromagnetically-


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activated pulse generator as taught by Prain et al. to minimize the energy required to provide each energy pulse, making battery operation, with its attendant simplicity, feasible for long periods of time.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean D. Andrish whose telephone number is (571) 270-3098. The examiner can normally be reached on Mon - Fri, 7:30am - 5:00pm, Alternate Fri off, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Victor Batson can be reached on (571) 272-6987. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

 6-10-07
Charles Fox
Primary Patent Examiner
Art Unit 3600

SDA
6/11/2007